

**§ 28.550**

this section must be at least 10 foot-degrees (0.053 meter-radians).

**§ 28.550 Icing.**

(a) *Applicability.* Each vessel that operates north of 42° North latitude between November 15 and April 15 or south of 42° South latitude between April 15 and November 15 must meet the requirements of this section.

(b) Except as provided in paragraph (d) of this section, the weight of assumed ice on each surface above the waterline of a vessel which operates north of 66°30' North latitude or south of 66° South latitude must be assumed to be at least:

(1) 6.14 pounds per square foot (30 Kilograms per square meter) of horizontal projected area which corresponds to a thickness of 1.3 inches (33 millimeters); and

(2) 3.07 pounds per square foot (15 Kilograms per square meter) of vertical projected area which corresponds to a thickness of 0.65 inches (16.5 millimeters).

(c) Except as provided in paragraph (d) of this section, the weight of assumed ice on a vessel that operates north of 42° North but south of 66°30' North latitude or south of 42° South but north of 66° South latitude must be assumed to be at least one-half of the values required by paragraphs (b)(1) and (b)(2) of this section.

(d) The height of the center of gravity of the accumulated ice should be calculated according to the position of each corresponding horizontal surface (deck and gangway) and each other continuous surface on which ice can reasonably be expected to accumulate. The projected horizontal and vertical area of each small discontinuous surface such as a rail, a spar, and rigging with no sail can be accounted for by increasing the calculated area by 15 percent.

(e) The weight and location of ice must be included in the vessel's weight and centers of gravity in each condition of loading when performing the stability calculations required by this subpart.

[CGD 88-079, 56 FR 40393, Aug. 14, 1991; 56 FR 47679, Sept. 20, 1991]

**46 CFR Ch. I (10-1-13 Edition)**

**§ 28.555 Freeing ports.**

(a) Except as provided in paragraph (i) of this section, each decked vessel fitted with bulwarks must be fitted with freeing ports.

(b) Freeing ports must be located to allow the rapid clearing of water in all probable conditions of list and trim.

(c) Except as provided by paragraphs (d) through (h) of this section, the aggregate clear area of freeing ports on each side of the vessel must not be less than 0.71 plus 0.035 times the length of the bulwark, in meters, for area in square meters, or 7.6 plus 0.115 times the length of the bulwark, in feet, for the area in square feet. The length of bulwark need not exceed 0.7 times the overall length of the vessel.

(d) Except as provided in paragraphs (e) through (h) of this section, for bulwarks which exceed 20.11 meters (66 feet) in length, the aggregate clear area of freeing ports on each side of the vessel must not be less than 0.07 times the length of the bulwark, in meters, for an area in square meters (0.23 times the length of the bulwark in feet, for an area in square feet). The length of the bulwark need not exceed 0.7 times the overall length of the vessel.

(e) For a bulwark more than 4 feet (1.22 meters) in height, the freeing port area required by paragraphs (c) or (d) of this section must be increased in accordance with the following formula:

$$i = [h - 4]0.04q, \quad (i = [h - 1.722]0.04q, \quad \text{for metric units), where:}$$

i=increase in freeing port area, in square feet (square meters);

h=bulwark height, in feet (meters); and

q=length of bulwark exceeding 4 feet (1.22 meters) in height, in feet (meters).

(f) For a bulwark less than 3 feet (0.91 meters) in height, the required freeing port area, required by paragraph (c) or (d) of this section, may be decreased in accordance with the following formula:

$$r = [3 - h]0.04q, \quad (r = [h - 0.91 - h]0.04q), \quad \text{where:}$$

r=permitted reduction in freeing port area, in square feet (square meters).

h=bulwark height, in feet (meters).

q=length of bulwark which is less than 3 feet (0.914 meters) in height, in feet (meters).